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SHORT REPORT

Neurovascular Compression of the Common Peroneal Nerve by Varicose Veins

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Compression of the common peroneal nerve occurs sometimes, but compression caused by varicose veins has not been reported before. We report a case of common peroneal nerve compression syndrome which was confirmed and treated surgically. A 63-year-old woman complained of paræsthesia on the lateral aspect of the right leg, which was worse in the evening. A primary varicose vein arising from non-saphenous tributaries was seen in the posterior calf. Her symptoms resolved with the wearing of compression hosiery for 2 weeks. At operation, the common peroneal nerve was found to be surrounded by tortuous varicosities. After decompression the paræsthesia on the lateral aspect of the right leg resolved completely with no evidence of residual neuralgia.

Introduction

During surgery for varicose veins, injury of the saphenous nerve and sural nerve sometimes occurs, because the saphenous nerve runs near the great saphenous vein in the calf and the sural nerve runs near the small saphenous vein in the posterior calf. Varicose veins occasionally arise from non-saphenous tributaries.[1] In some cases, these varicose veins appear in the popliteal fossa, *via* perforating veins. At the lateral border of the popliteal fossa, the common peroneal nerve runs just beneath the deep fascia.

Compression syndromes of the common peroneal nerve have been reported to be caused by fracture, casting, and rarely by tumors of the popliteal fossa (including ganglion, hemangioma, desmoid tumor, and neuroma), although idiopathic compression is the most common.[2–8] Here, we report a case of common peroneal nerve compression syndrome caused by varicose veins of the popliteal fossa in a patient with a normal saphenous trunk.

Case Report

A 63-year-old woman complained of paresthesia affecting the lateral aspect of the right leg, which was worse in the evenings. Varicose veins were seen at the posterior calf. Her complaint was thought to be due to neuralgia of the common peroneal nerve, but the relationship between the varicosities and her symptoms was unknown. She was given elastic stockings to wear for 2 weeks, resulting in the disappearance of symptoms. Resolution of her complaint suggested a relationship between common peroneal nerve neuralgia and the varicose veins. Preoperative duplex ultrasonography revealed an incompetent posterolateral perforating vein in the popliteal fossa, and a tortuous varicose vein was detected in the subfascial space, although the great and small saphenous veins and the deep venous system were all normal. The varicose vein extended into the posterior calf and communicated with the lateral gastrocnemius perforating vein (Fig. 1).

Under local anæsthesia, the tortuous varicose vein was detected through a small incision. The common peroneal nerve was surrounded by tortuous varicosities, so the vein was carefully divided, dissected, and removed to decompress the nerve (Fig. 2). Varicectomy was performed through an additional incision (Fig. 3). After the operation, paresthesia at the lateral aspect of the right leg disappeared completely with no residual neuralgia.

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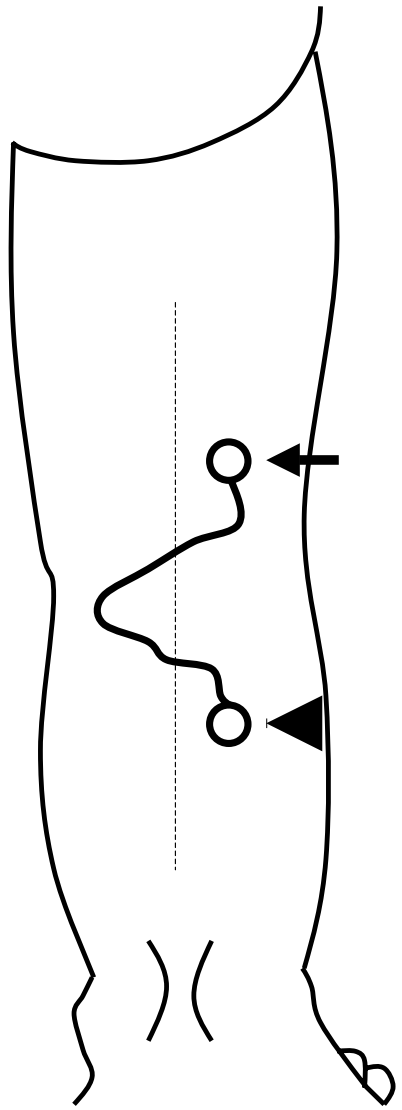


Fig. 1. Diagram of right leg varicose veins at the popliteal fossa. The varicosity arises from the posterolateral perforating vein at the knee (arrow) and communicates with another perforator in the calf (arrowhead).

Discussion

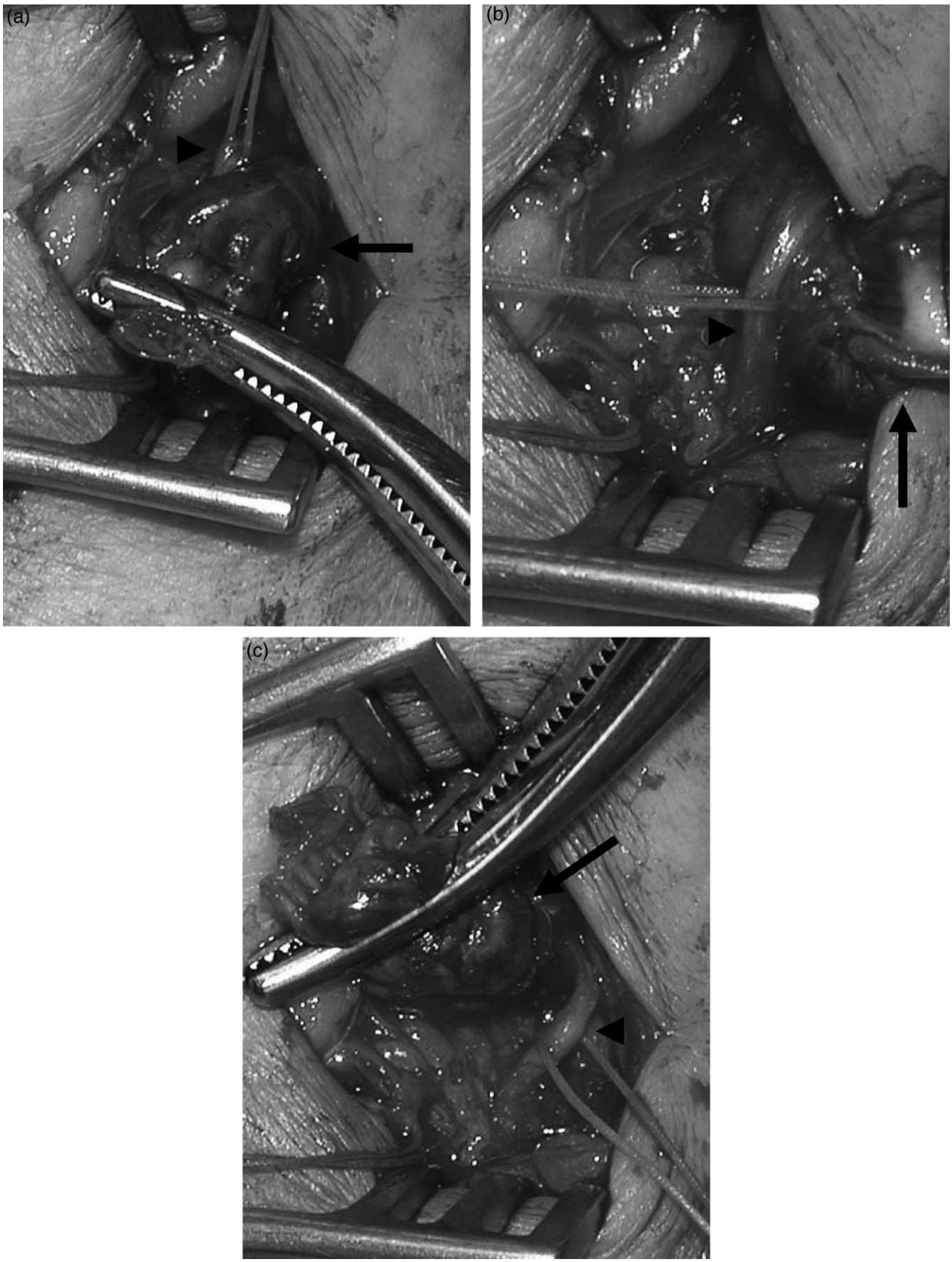
Common peroneal nerve compression syndrome occurs sometimes and idiopathic cases are the most common, although specific causes have been reported such as fracture, inadequate casting, sports (dynamic), and tumors (ganglion, neuroma, desmoid tumor, and hemangioma).[2–8] Compression of the common peroneal nerve by a popliteal artery aneurysm has been reported as a cause,[9,10] as well as radial nerve compression by a large venous aneurysm.[11] This is the first reported case of common peroneal nerve compression caused by varicose veins.

Diagnosis of compression neuropathy is difficult. Electrodiagnostic techniques have been employed to detect the presence of nerve injury, but ætiological diagnosis can still be difficult. In this patient, electrodiagnostic techniques were not employed, and the relationship between a varicose vein of the posterior calf and paresthesia on the lateral aspect of the leg was uncertain. Worsening of the complaint in the evening suggested that the symptom was related to varicose veins. To confirm that neuralgia was caused by the varicose vein, elastic stockings were applied and the paresthesia resolved. Magnetic resonance imaging (MRI) is reported helpful in the diagnosis and the anatomical understanding of ganglion cysts around the knee joint, which can cause peroneal nerve compression.[8,12]

Most cases of primary varicose veins involve the superficial venous system, especially the great and small saphenous veins. However, primary varicose veins associated with normal great and small saphenous systems have been reported.[1] Such non-saphenous venous reflux is more common in women and seems to be associated with female sex and pregnancy. The common symptoms are pain, a burning sensation, and itching. Many of these non-saphenous varicosities arise in the posterior thigh and run lateral to the knee and popliteal fossa to reach the lateral, posterior, and medial aspects of the calf. The varicose vein of our patient arose from a posterolateral perforating vein in the popliteal fossa and extended to the medial aspect of the calf, communicating with the lateral gastrocnemius perforating vein.[13]

During surgery for varicose veins, injury to the saphenous nerve and sural nerve sometimes occurs, because the saphenous nerve runs near the great saphenous vein in the calf and the sural nerve runs near the small saphenous vein in the posterior calf. The common peroneal nerve runs through the popliteal fossa by crossing superficial to the lateral head of gastrocnemius muscle and then gives off a cutaneous branch. Sensory disturbance due to common peroneal nerve injury occurs down the anterior and lateral sides of the leg and on the dorsum of the foot and toes.[2] In our patient, a perforating vein was found in the posterolateral popliteal fossa and extended into the

Fig. 2. Intraoperative findings. (a) The varicose vein (arrow) was divided and the common peroneal nerve (arrowhead) was taped. (b) The tortuous varicosity (arrow) was dissected from the common peroneal nerve (arrowhead). (c) The varicose vein (arrow) was completely resected from the common peroneal nerve (arrowhead) and decompression was achieved.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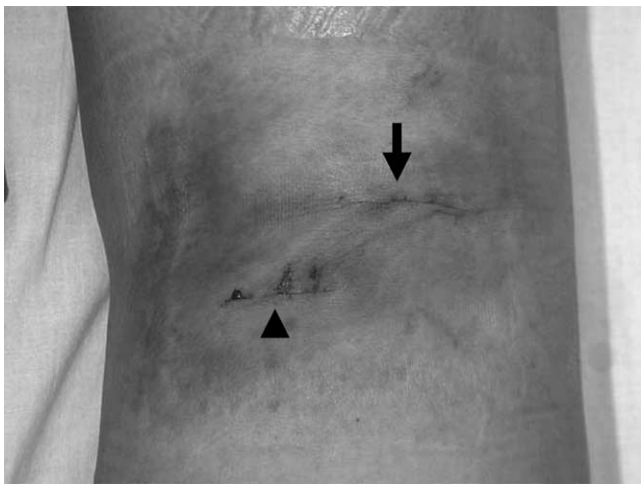

Fig. 3. The wound is located lateral to the sapheno-popliteal junction (arrow). Another incision was added to remove the superficial varicosity (arrowhead).

upper calf. Anatomically, the varicosities encompassed the common peroneal nerve by 180° in the subfascial space at the popliteal fossa. The varicosities were lightly attached to the nerve. Adhesiolysis was easily archived, and the varicosity was dissected and ligated. The symptoms disappeared immediate after surgery. Normal venous pressure or simple attachment to the nerve is thought to be insufficient to induce the compression syndrome. In this case, compression may have been caused because a dilated varicose vein with increased venous pressure was wound around the nerve.

Treatment of compression syndrome varies with the etiology. In idiopathic cases, conservative therapy is mainly employed, while adhesiolysis and resection result in good recovery when compression syndrome is caused by a mass. Compression caused by ganglion cysts have to be treated on an anatomical basis, by knowing where the cyst communicates with the joint, and the neck of the cyst must be ligated in addition to the resection of the cyst and decompression of the nerve.[8] In our patient, the varicose vein was divided and resected, resulting in decompression of the common peroneal nerve. Her symptoms disappeared immediately after surgery leaving no residual neuralgia.

In summary, this case of common peroneal nerve compression syndrome was caused by a varicose vein that arose from a posterolateral incompetent perforator. Resection of the varicose vein resulted in good recovery from the compression syndrome.

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